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Eungard et al.

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(54) **SEALING SYSTEMS AND ASSOCIATED DEVICES FOR SEALING LOADING DOCK DOORS AND THE LIKE**

(71) Applicant: **4Front Engineered Solutions, Inc.**, Carrollton, TX (US)

(72) Inventors: **William C. Eungard**, Waterford, WI (US); **Joshua James Brown**, Waukesha, WI (US); **Ryan John Talbot**, Oconomowoc, WI (US)

(73) Assignee: **4Front Engineered Solutions, Inc.**, Carrollton, TX (US)

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E06B 7/16 (2006.01)

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CPC . ***E05D 15/24*** (2013.01); ***E06B 7/16*** (2013.01); *E05Y 2800/12* (2013.01)

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USPC 49/197, 199, 479.1, 482.1, 484.1, 49/493.1, 496.1, 498.1, 500.1
See application file for complete search history.

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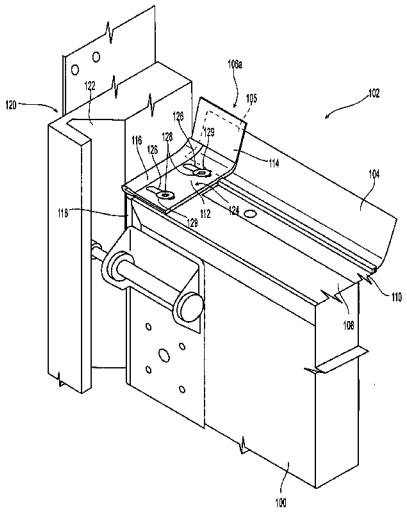
Primary Examiner — Katherine Mitchell
Assistant Examiner — Catherine A Kelly
(74) *Attorney, Agent, or Firm* — Perkins Coie LLP

(57) **ABSTRACT**

Systems, devices and components for the sealing of doors, including overhead doors at loading docks, and associated methods of manufacture and use are disclosed herein. A door sealing system configured in accordance with one embodiment of the disclosure includes a seal extension having a body with a first edge and a second edge. The seal extension can include a bulb seal portion extending from the first edge to form a first seal between the door and a first surface extending adjacent to a side edge of the door. The seal extension can also include a blade seal portion extending from the second edge to form a second seal between the door and a second surface extending adjacent to an upper edge of the door.

10 Claims, 9 Drawing Sheets



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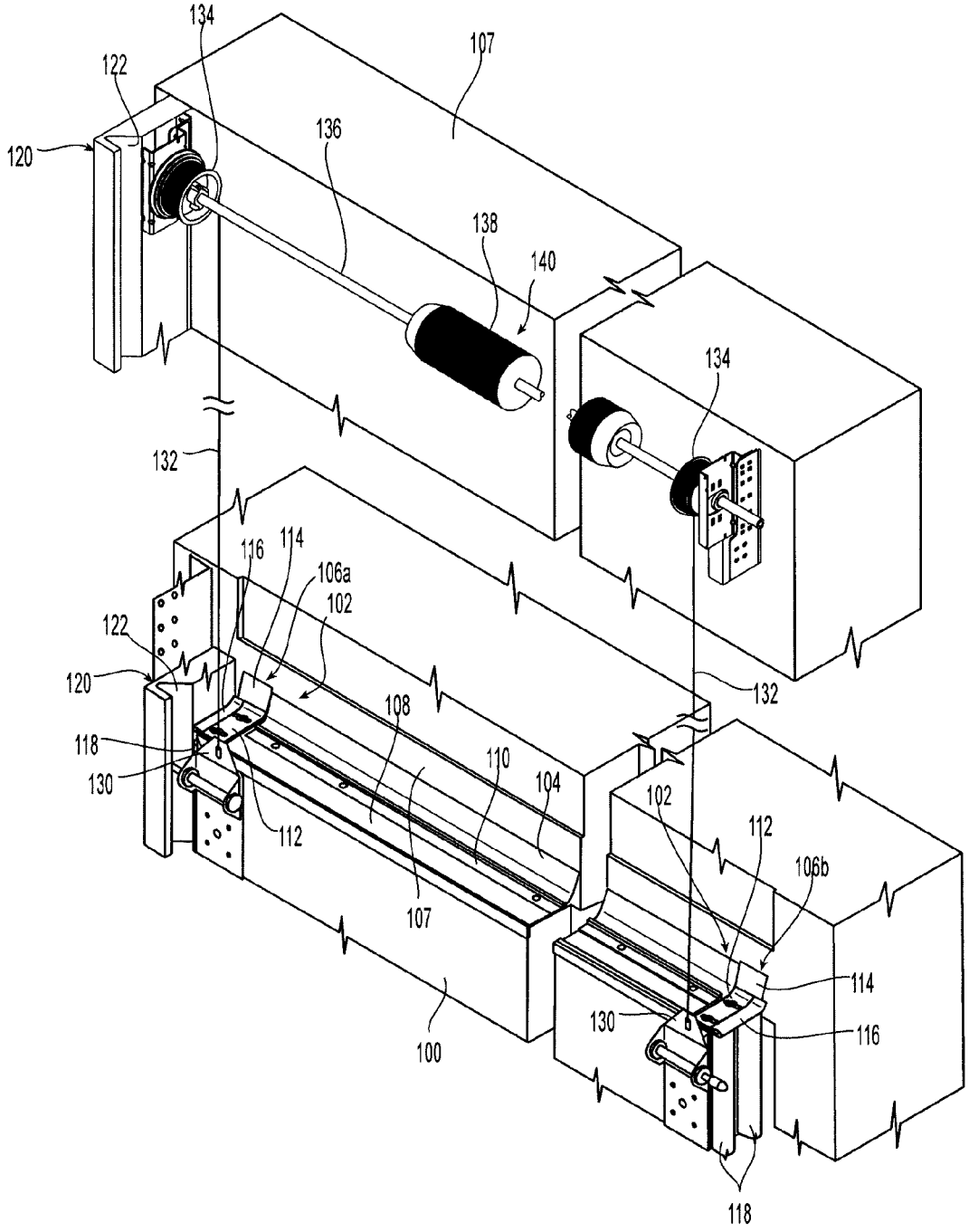
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114
106a
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112
112
106b
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100
118

Fig. 1A

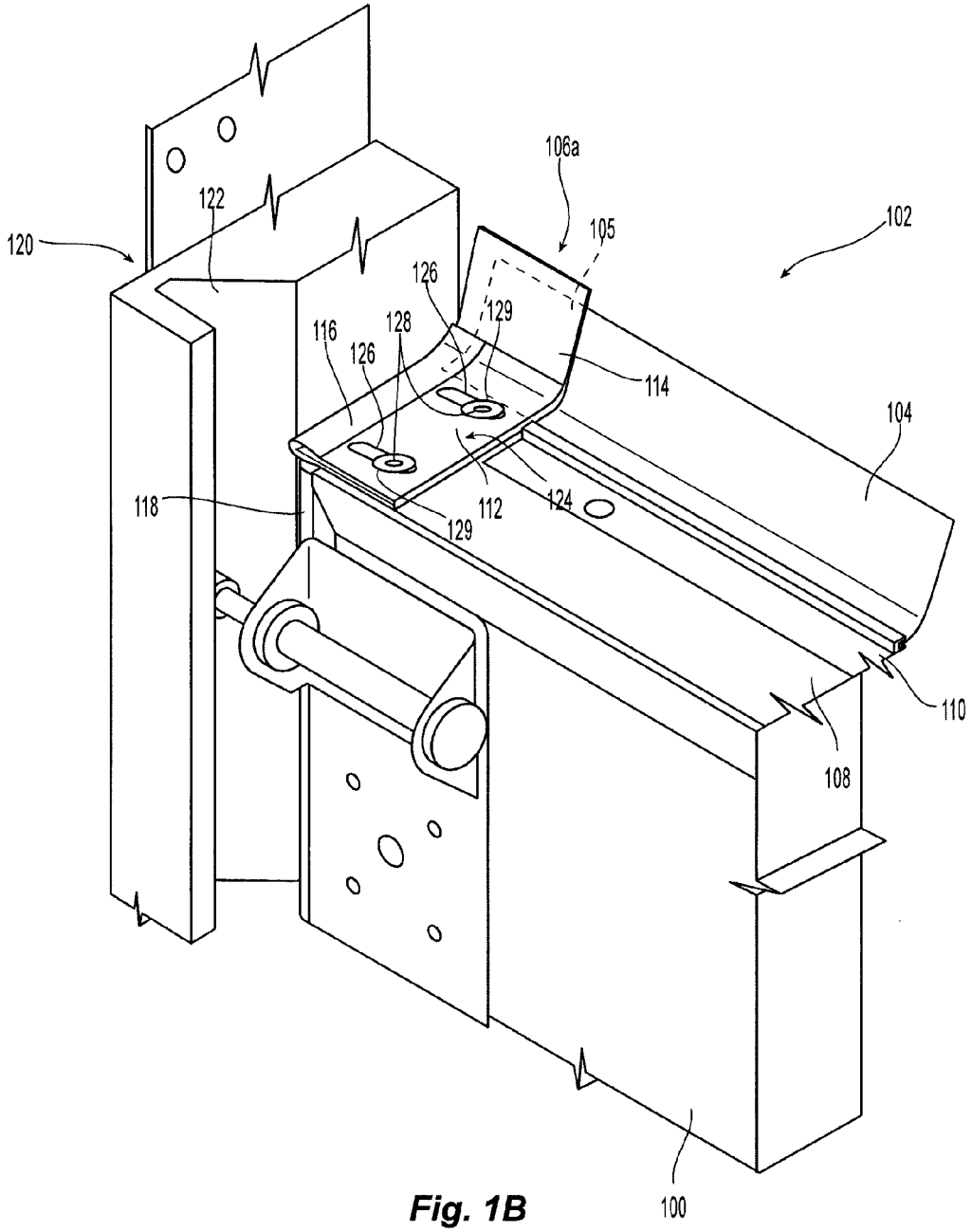
120
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Fig. 1B

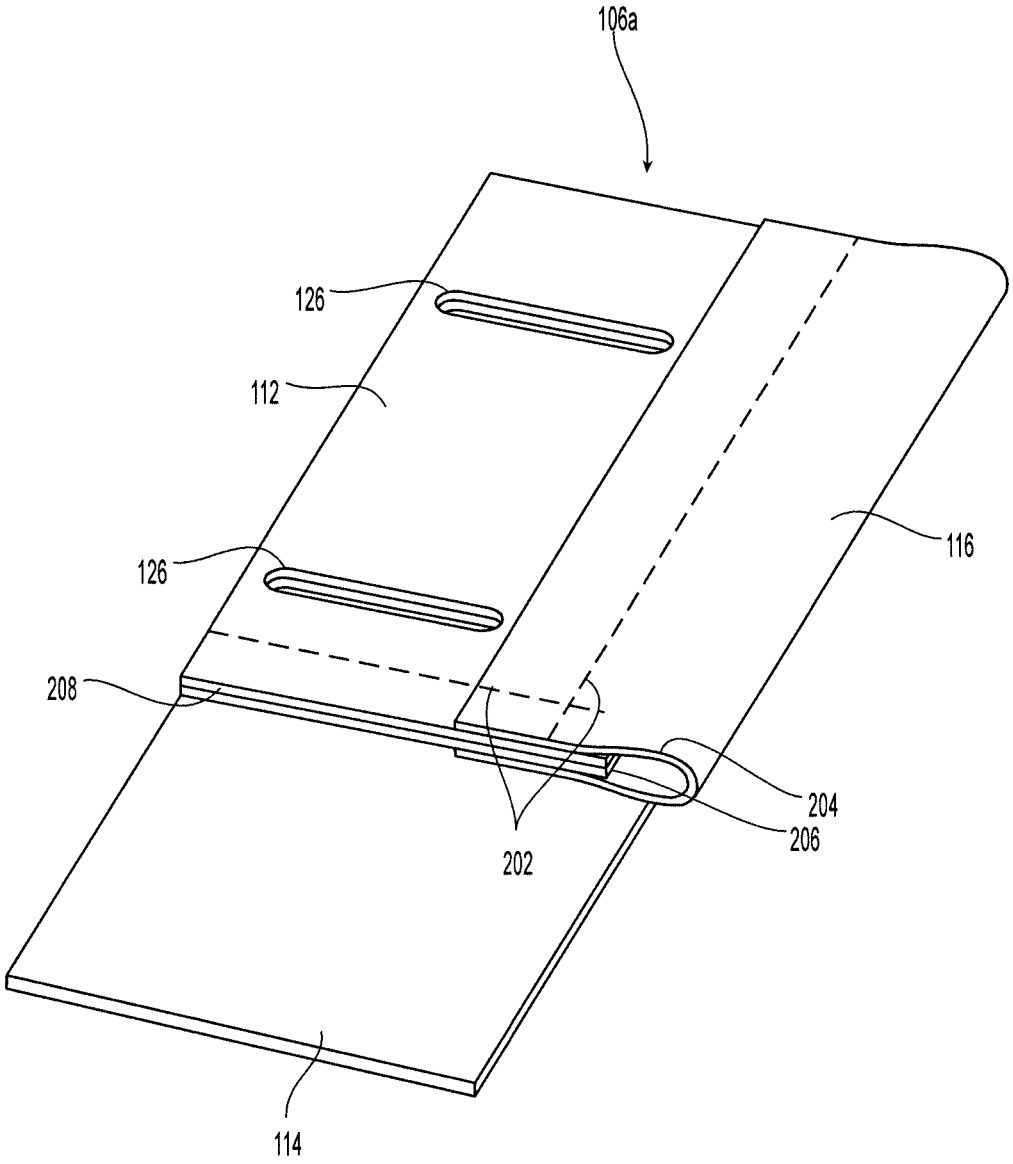


Fig. 2

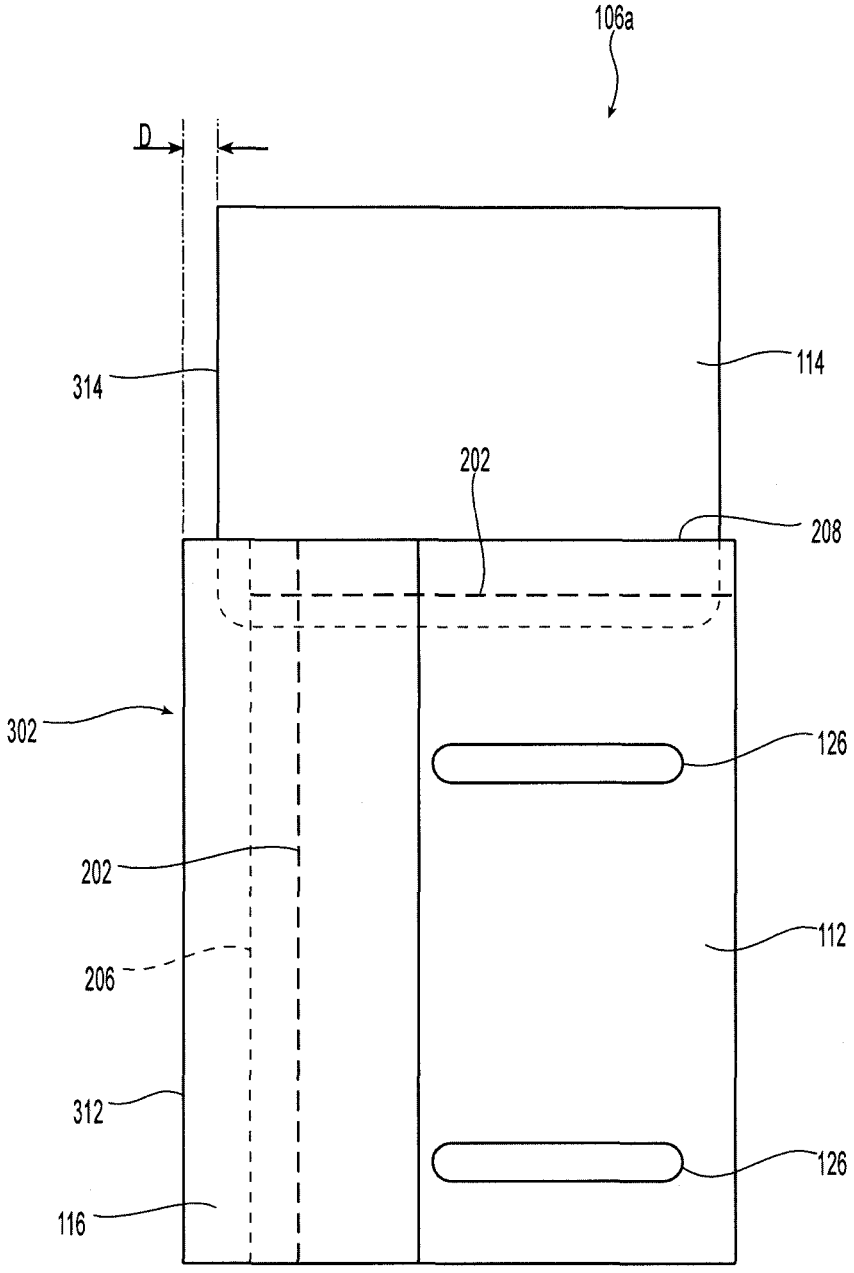


Fig. 3

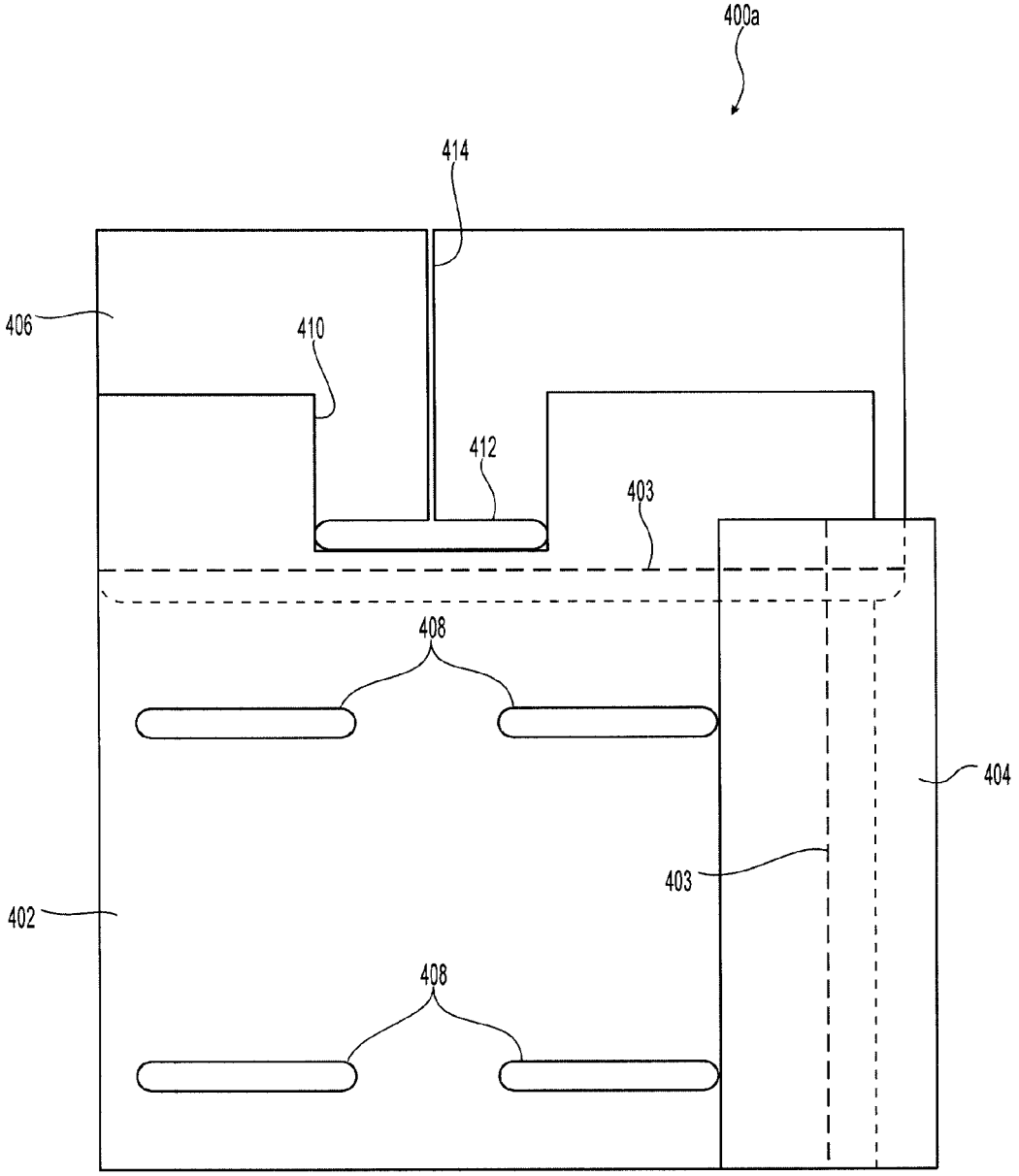
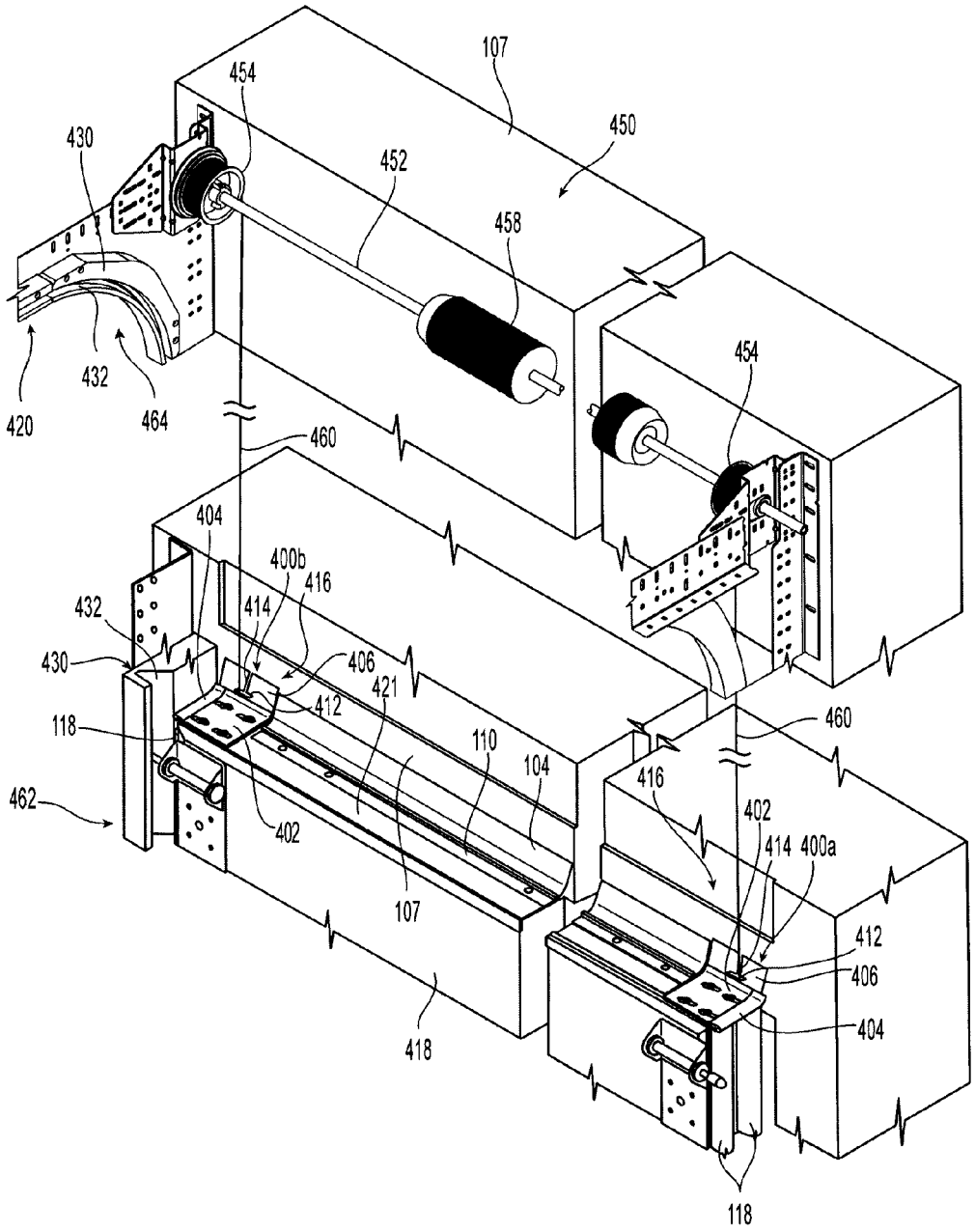


Fig. 4A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430
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416
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107
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418
404
118

Fig. 4B

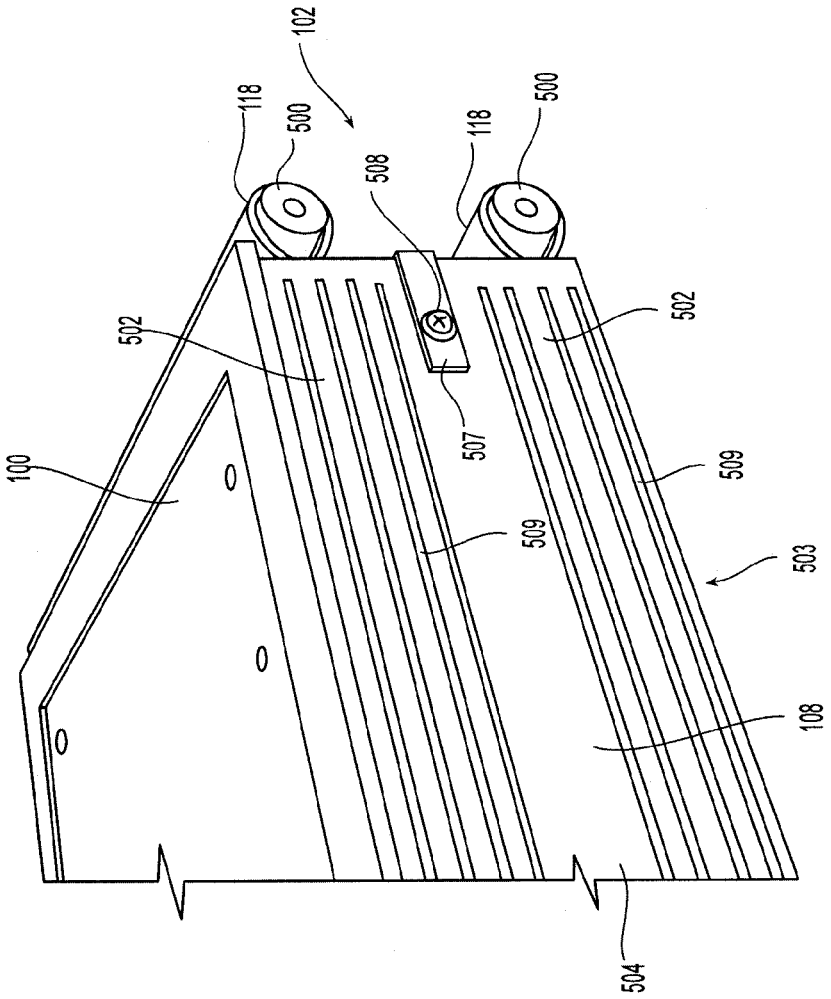


Fig. 5B

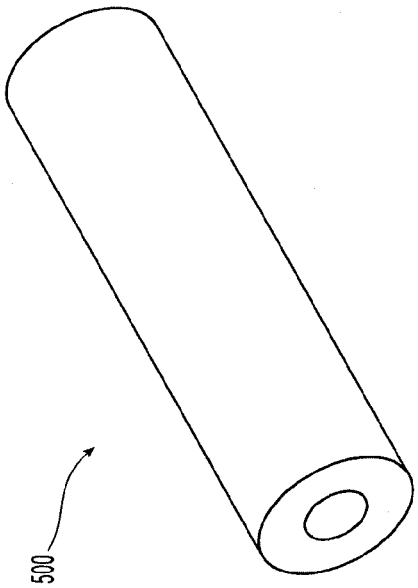
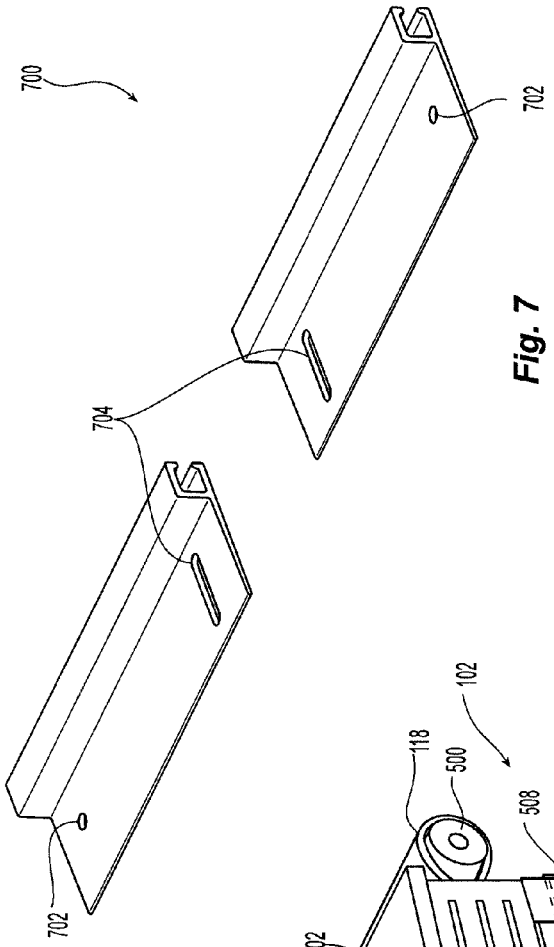


Fig. 5A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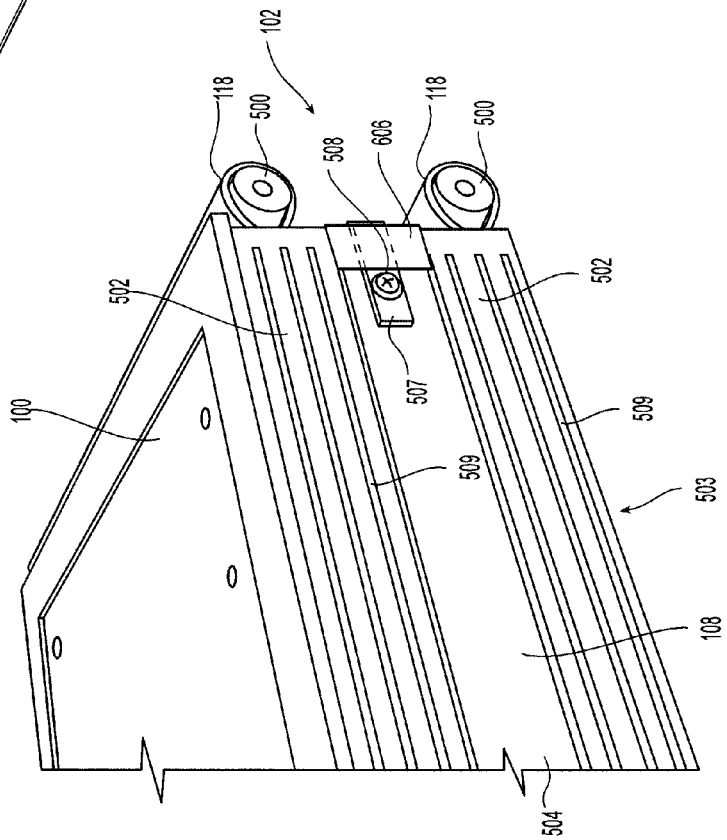
704
702

Fig. 7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118
500
508
606
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502
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503
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Fig. 6

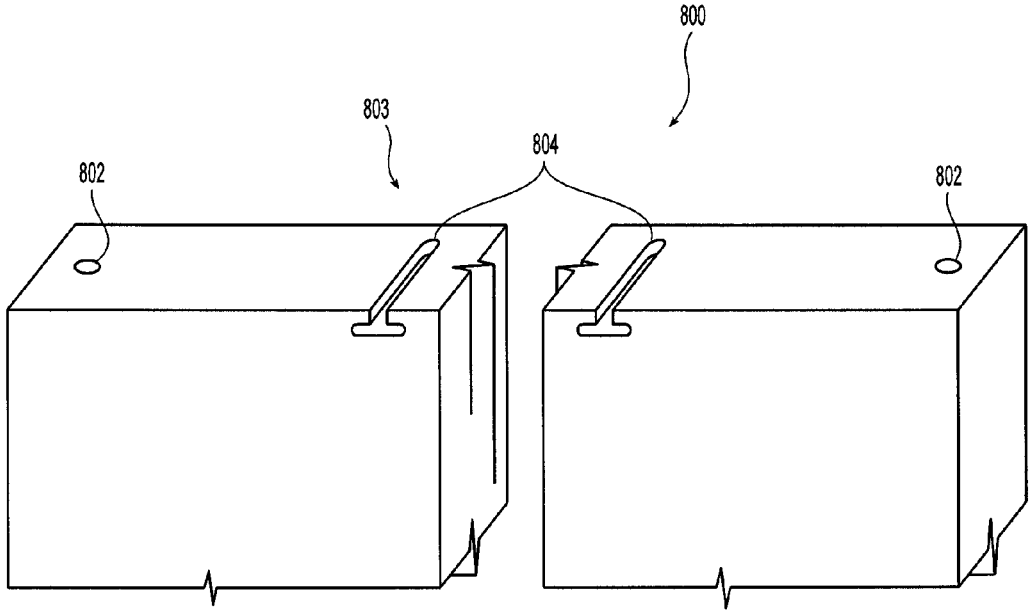

Fig. 8

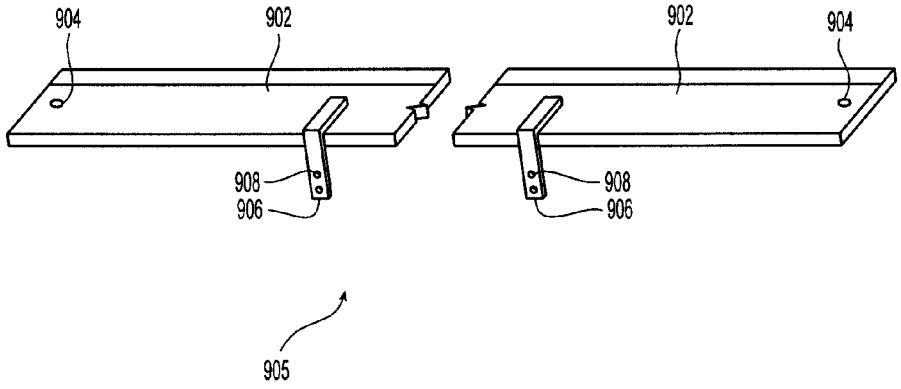

Fig. 9

SEALING SYSTEMS AND ASSOCIATED DEVICES FOR SEALING LOADING DOCK DOORS AND THE LIKE

TECHNICAL FIELD

The following disclosure relates generally to sealing systems, and more specifically to sealing systems for overhead doors.

BACKGROUND

Overhead doors are commonly used on loading docks and in various warehouse and factory settings. These doors often include one or more seals positioned along an edge to help reduce the passage of air and/or moisture between the door edge and the facility. For example, a blade seal is often provided along a top edge of the door to seal a horizontal gap between the upper portion of the door and the adjacent building wall. The blade seal is usually positioned to extend past the top corners of the door and is held in place by a metal seal retainer that extends along the top edge of the door. The seal retainer can reduce the tendency of the blade seal to bend or deflect away from the building.

Conventional overhead doors typically include one or more panels that are coupled to track assemblies having vertical tracks that guide the door as it moves upwardly into an overhead or open position. To reduce the chance of impact and damage to the seal retainer or the guide tracks, the ends of the seal retainer are set back from the top corners of the door. As a result, the end portions of the blade seal that extend outwardly past the top corners of the door can deflect away from the building and/or away from the track assemblies, providing a gap for the passage of air and/or moisture. Accordingly, although conventional blade seals can provide sufficient sealing along a portion of the top edge of a door, such seals typically provide poor sealing at the top corners of the door.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1**A is an isometric top view of a portion of an overhead door having a door sealing system configured in accordance with an embodiment of the present technology.

FIG. **1**B is an enlarged isometric top view of a portion of the door sealing system of FIG. **1**A.

FIG. **2** is an isometric top view of a seal extension configured in accordance with an embodiment of the present technology.

FIG. **3** is a top view of the seal extension of FIG. **2**.

FIG. **4**A is a top view of a seal extension configured in accordance with another embodiment of the present technology.

FIG. **4**B is an isometric top view of a portion of an overhead high-lift door having a door sealing system configured in accordance with an embodiment of the present technology.

FIG. **5**A is an isometric view of a bulb plug configured in accordance with an embodiment of the present technology.

FIG. **5**B is isometric top view of a door sealing system configured in accordance with an embodiment of the present technology.

FIG. **6** is an isometric top view of a door sealing system configured in accordance with an embodiment of the present technology.

FIG. **7** is an isometric top view of a seal retainer configured in accordance with an embodiment of the present technology.

FIG. **8** is an isometric top view of a door configured in accordance with an embodiment of the present technology.

FIG. **9** is an isometric top view of a seal retainer having a mounting system configured in accordance with an embodiment of the present technology.

DETAILED DESCRIPTION

The following disclosure describes various embodiments of door sealing systems, devices and components for use with doors (e.g., overhead doors), and associated methods of manufacture and use. In one embodiment, a door sealing system includes a pair of seal extensions that can be mounted to a top edge of a door in conjunction with a blade seal that extends along the top edge. The seal extensions can include adjustable mounting features to assist in precise positioning of the seal extensions. The seal extensions can provide an enhanced seal between the door and an adjacent building wall, particularly in the vicinity of the corners of the door opening.

Certain details are set forth in the following description and FIGS. **1A-9** to provide a thorough understanding of various embodiments of the present technology. Other details describing well-known structures and systems often associated with seals, sealing systems, and overhead doors, however, are not set forth below to avoid unnecessarily obscuring the description of the various embodiments of the present technology.

Many of the details and features shown in the Figures are merely illustrative of particular embodiments of the present technology. Accordingly, other embodiments can have other details and features without departing from the spirit and scope of the present disclosure. In addition, those of ordinary skill in the art will understand that further embodiments can be practiced without several of the details described below. Furthermore, various embodiments of the present technology can include structures other than those illustrated in the Figures and are expressly not limited to the structures shown in the Figures. Moreover, the particular features, structures, or characteristics described with reference to any of the embodiments herein may be combined in any suitable manner in one or more other embodiments. Finally, the various elements and features illustrated in the Figures may not be drawn to scale.

In the Figures, identical reference numbers identify identical, or at least generally similar, elements. To facilitate the discussion of any particular element, the most significant digit or digits of any reference number refer to the Figure in which that element is first introduced. Element **104**, for example, is first introduced and discussed with reference to FIG. **1**A.

FIG. **1**A is an isometric top view of an upper portion of an overhead door **100** having a door sealing system **102** configured in accordance with an embodiment of the present technology. In the illustrated embodiment, the door sealing system **102** includes a blade seal **104** and a pair of seal extensions **106** (identified individually as a first seal extension **106***a* and a second seal extension **106***b*). The blade seal **104** extends along a top edge **108** of the door **100** adjacent to a wall **107** (e.g., a header). The blade seal **104** can be secured to the door **100** via a seal retainer **110** (e.g., a metal or aluminum retainer). Each individual seal extension **106** can include a body **112**, a first sealing portion or blade seal portion **114**, and a second sealing portion or bulb seal portion **116**. The door sealing system **102** can further include one or more side seals **118** (e.g., bulb seals having internal cavities) attached to the side edges of the door **100**.

The door **100** can be movably coupled to a pair of track assemblies **120** (for clarity, only one track assembly **120** is shown in FIG. **1**A) having associated guide tracks **122**. Rollers or plungers can extend outwardly from the sides of the door **100** to movably engage the adjacent guide tracks **122** and facilitate movement of the door between a closed or down position (as shown) and a raised or open position. For example, the door **100** can include attached brackets **130** that operably couple the door **100** to a lifting system **140** via cables **132**. A first end portion of each of the cables **132** can be coupled to a corresponding bracket **130**, and an opposite end portion of each cable **132** can be attached to a corresponding drum **134** of the lifting system **140**. The lifting system **140** can be a conventional counterbalance assembly having one or more biasing members **138** (e.g., torsion springs) operably coupled to a shaft **136** to rotationally bias the drums **134** in a direction that applies tension to the cables **132** to assist in raising of the door **100**. The lifting system **140**, door **100**, track assemblies **120**, brackets **130**, and/or other systems, devices and/or components described in the present disclosure, can be at least generally similar in structure and function to systems, devices and/or components described in U.S. patent application Ser. No. 13/079,437, entitled DOOR LEVELING APPARATUSES AND ASSOCIATED METHODS OF MANUFACTURE AND USE, filed Apr. 4, 2011, the entirety of which is incorporated by reference herein.

FIG. **1**B is an enlarged isometric top view of a portion of the door sealing system **102** of FIG. **1**A. In the illustrated embodiment, the seal extension **106***a* includes an adjustable mounting feature **124** having a pair of elongated openings or fastener slots **126** in the body **112**. Fasteners **128** (e.g., screws) can extend through corresponding washers **129** and through the individual slots **126** to mount the seal extension **106***a* to the top edge **108** of the door **100** adjacent to the end of the seal retainer **110**. The seal extension **106***a* can be mounted such that the blade seal portion **114** at least partially overlaps an end portion **105** of the blade seal **104** (as shown in the illustrated embodiment). Additionally, the adjustable mounting feature **124** enables the position of the seal extension **106***a* to be adjusted relative to the door **100**, and enables the bulb seal portion **116** to maintain a close fit against the adjacent surface of the track assembly **120**, as further described below.

FIG. **2** is an isometric top view of the seal extension **106***a* of FIGS. **1**A and **1**B. The seal extensions **106** can be constructed from various suitable materials known in the art and in a variety of manners. For example, the body **112**, the blade seal portion **114**, and/or the bulb seal portion **116** can be constructed from polymers (e.g., rubber, synthetic rubber, vinyl, plastic, etc.) and/or other resilient materials. In a particular embodiment, the body **112** can be semi-rigid and constructed from a heavy vinyl fabric (e.g., 100 ounce, two-ply vinyl fabric from Derco). In other embodiments, the body **112** can be constructed from other materials, including other semi-rigid, rigid, or flexible materials. The body **112** can be, for example, cut or stamped from a larger piece of material and the slots **126** can be cut or stamped from the body **112**.

The bulb seal portion **116** can be constructed from a variety of materials, including vinyl. For example, in the illustrated embodiment of FIG. **2**, the bulb seal portion **116** is composed of a relatively thin vinyl, as compared to that of the body **112**. The bulb seal portion **116** can be formed by folding a piece of vinyl over a first or outboard edge **206** of the body **112** and attaching the piece of vinyl to the body **112** (e.g., via stitches **202**) to form a loop or bulb **204** that extends from the edge **206**. The bulb **204** is compressible and can form a conformable seal against the adjacent surface of the corresponding track assembly **120**.

In several embodiments, the blade seal portion **114** and the blade seal **104** (FIGS. **1**A and **1**B) can be formed or made from the same type of material. In a particular embodiment the blade seal **104** and the blade seal portion **114** are composed of a synthetic rubber (e.g., an ethylene propylene diene monomer (EPDM) rubber) that can be molded, formed, and/or cut into a suitable shape. The blade seal portion **114** can be positioned to extend from a second or front edge **208** of the body **112** and can be attached to the body **112** via stitching (e.g., nylon thread stitches **202**). In the illustrated embodiment, the body **112** is positioned over the blade seal portion **114** to provide support to the blade seal portion **114** and reduce flexing or bending, as further described below.

FIG. **3** is a top view of the seal extension **106***a* of FIG. **2**. In the illustrated embodiment, a first outer edge **312** of the bulb seal portion **116** is offset from a second outer edge **314** of the blade seal portion **114** by a distance D along a common side **302** of the seal extension **106***a*. The common side **302** of the seal extension **106***a* can be positioned adjacent to the track assembly **120** (FIG. **1**) to form a seal against the adjacent surface of the track assembly **120**, as further described below. Similarly, the seal extension **106***b* can form a seal against the opposite track assembly **120** positioned on the opposite side of the door **100**.

In conventional door sealing systems, a blade seal often extends across the top of the door and past the sides of the door towards an adjacent wall or track assembly in an attempt to seal the areas near the upper corners of the door. The blade seal is often cut or otherwise sized in the field (e.g., at a facility in which it is installed) to provide a close fit against an adjacent track assembly. However, gaps are often present between the ends of the blade seal and the adjacent tracks because the cut or sizing is not precise enough. Additionally, conventional door sealing systems often include a seal retainer that is usually shorter than the width of the door and does not extend to the side edges of the door to prevent interference and possible damage that may occur due to impacts between the seal retainer and the track assemblies. Accordingly, the portions of the blade seal that extend past the top of the sides of the door are not retained in position, and when the door is closed, the end portions of the blade seal can deflect upwards to open a gap that allows for the passage of air and/or moisture into or out of the facility. Embodiments in accordance with the present technology can reduce these gaps, support the portions of the blade seal that extend past the door, and can provide a more robust and secure seal system.

The door sealing system **102** can provide for an enhanced seal between the door **100** and the wall **107**, and between the door **100** and the track assembly **120** (FIG. **1**A). For example, referring to FIGS. **1**A-**3**, the blade seal **104** can be cut or otherwise sized to extend across the top edge **108** of the door **100** and just past the side edges of the door **100**. The seal retainer **110** can be sized to extend along the top edge **108**, and not past the side edges of the door **100**. The seal retainer **110** can reduce deflection of the blade seal **104** and help to maintain contact between the blade seal **104** and the adjacent wall **107**. Accordingly, the blade seal **104** and the associated seal retainer **110** can provide a seal between the door **100** and the adjacent wall **107** along most of the width of the door **100**.

The adjustable seal extensions **106** can be positioned along the top edge **108** in the upper corners of the door **100** to provide a seal between the upper corners of the door **100** and one or more first surfaces extending adjacent to the side edges of the door (e.g., the adjacent surfaces of the associated track assemblies **120**), and between the upper corners of the door **100** and one or more second surfaces extending adjacent to the top edge **108** (e.g., a surface of the wall **107**). For example,

the seal extensions **106** can be attached to the door **100** prior to installation of the door **100**, and can subsequently be adjusted after installation of the door **100** to provide a more precise seal. More specifically, the seal extensions **106** can be positioned along the top edge **108** adjacent to or near the seal retainer **110**, and temporarily secured to the door **100** with the fasteners **128** at the outer ends of the slots **126** (i.e., with the seal extensions **106** positioned at a furthest most inward position). After installation of the door **100** at a facility, the fasteners **128** can be loosened and the seal extensions **106** can be slid outwardly until the bulb seal portions **116** are at least partially compressed against the track assemblies **120**. The fasteners **128** can then be retightened to secure the seal extensions **106** in an operational position. When the seal extensions **106** are in the outward, operational positions (as shown in FIGS. **1**A and **1**B), the bulb seal portions **116** are partially compressed to maintain a seal against the adjacent surfaces of the associated track assemblies **120**. Additionally, the body **112** and/or the bulb seal portions **116** can provide a seal against the side seals **118**, reducing any air flow through or between the side seals **118**. Furthermore, in the operational position, the blade seal portions **114** can at least partially overlap the blade seal **104**, thereby supporting the blade seal **104** and providing a continuous seal along the wall **107**, as well as providing a seal along a portion of the adjacent surfaces of the associated track assemblies **120**.

In operation, the blade seal **104** and the seal extensions **106** can maintain an enhanced seal when the door **100** is in a closed position, even after significant numbers of cycles of opening and closing of the door **100** and/or impacts or misalignments of the door **100**. For example, the conformable loop or bulb **204** of the bulb seal portions **116** can maintain a seal against the track assembly **120**, even if the door **100** undergoes a shift in its closed position. Specifically, if the closed position of the door **100** shifts to one or the other side as a result of an impact, wear, or any other reason, the bulb seal portion **116** on one side will compress and maintain a seal against the adjacent surface of the associated track assembly **120**, while the bulb seal portion **116** on the opposite side of the door **100** will expand and maintain a seal against the adjacent surface of its associated track assembly **120**. Furthermore, if the door undergoes a significant shift that causes the body **112** to impact the track assembly **120**, the body **112** can flex or deflect and subsequently return to position to maintain a seal.

FIG. **4**A is a top view of a first seal extension **400***a* configured in accordance with another embodiment of the present technology. The first seal extension **400***a* can include features and components that are at least generally similar to the seal extensions **106** of FIGS. **1**A-**3**. For example, the first seal extension **400***a* includes a bulb seal portion **404** and a blade seal portion **406** attached via stitches **403** to a semi-rigid body **402**. In the illustrated embodiment, the body **402** includes a plurality of elongated openings or slots **408** and a cutout **410**. Additionally, the blade seal portion **406** includes a cable slot **412** and a cable passage **414**. The cable passage **414** can accommodate operating cables that extend downwardly in front of the door and connect to a lower portion of the door for raising and lowering the door, as described below. The cable slot **412** can be formed by removing or cutting out a section of the blade seal portion **406**, and the cable passage **414** can be made by cutting the blade seal portion **406** along a line running from the cable slot **412** to the edge of the blade seal portion **406**.

FIG. **4**B is an isometric top view of a portion of an overhead high-lift door **418** having a door sealing system **416** configured in accordance with an embodiment of the present technology. The door sealing system **416** can include several components that are at least generally similar to those of the door sealing system **102** described above with reference to FIGS. **1**A-**3**. For example, the side seals **118** can be attached to the side edges of the door **418** and the seal retainer **110** can couple the blade seal **104** to a top edge **421** of the door **418**. The door **418** can be operably coupled to track assemblies **430** (for clarity, only one track assembly **430** is shown in FIG. **4**B) having guide tracks **432**. The track assemblies **430** can have a vertical portion **462**, a transition portion **464**, and a horizontal portion **420**. A lifting system **450** having shaft **452**, drums **454**, and a biasing member **458** can be operably coupled to the door via cables **460**. For example, the cables **460** can extend vertically downward from the drums **454** in front of the door **418** to connect to a lower portion of the door (not visible).

The door sealing system **416** further includes the first seal extension **400***a* positioned on the right side of the top edge **421** of the door **418** and a second seal extension **400***b* positioned on the left side of the top edge **421** of the door **418**. The first seal extension **400***a* and the second seal extension **400***b* (collectively the seal extensions **400**) can function in a manner at least generally similar to the seal extensions **106** described above. For example, the seal extensions **400** can at least partially overlap the blade seal **104** to form a seal along the wall **107** and can form a seal against an adjacent track assembly **430** via the bulb seal portions **404**. Additionally, the bodies **402** and/or the bulb seal portions **404** can provide a seal against the side seals **118**.

In operation, the seal extensions **400** can maintain an effective seal while accommodating the cables **460**. For example, as the cables **460** are wound onto the drums **454**, the blade seal portion **406** can maintain a seal with the wall **107**, while the cable slots **412** accommodate movement of the cables **460**. As the door **418** is raised, the plungers of the door **418** move along the guide tracks **432** from the vertical portion **462** of the track assembly **430**, through the transition portion **464**, and to the horizontal portion **420**. Accordingly, the door **418** and the attached seal extensions **400** move away from the wall **107** and the cables **460** when the door is raised to an open, horizontal storing position. In the illustrated embodiment, the cable passages **414** can provide for movement of the cables **460** into and out of the cable slots **412** as the upper portion of the door **418** moves toward or away from the cables **460**. Accordingly, the seal extensions **400** can provide sealing capabilities for doors (e.g., overhead horizontally storing doors) that move toward and away from cables during closing and opening.

In several embodiments, the cable passage **414** can be cut in the field to ensure accurate positioning. For example, the position of the cable passage **414** relative to the cable slot **412** can vary depending on the particular door or cable. In some embodiments, a technician or installer can position the seal extension **400** on a door and move the door to determine the position at which the cable attempts to enter the cable slot **412**. The installer can then cut the blade seal portion **406** to form the cable passage **414** in the correct position.

Although the seal extensions **106** and **400** described above include a plurality of components (e.g., the body **112**, the blade seal portion **114** and the bulb seal portion **116**), seal extensions in accordance with the present technology can include fewer or more components. In some embodiments, for example, seal extensions can be composed of a single contiguous component. In a particular embodiment, a seal extension can be a single component formed from an injection molded elastomeric material. In such an embodiment, the seal extension can have varying thicknesses and/or other design features to provide at least generally similar performance to the seal extensions **106** described above and illus-

trated in FIGS. **1**A-**4**B. For example, a molded seal extension **106** or **400** can include a thicker section that is positioned against or adjacent to a door, and one or more thinner sections that are positioned adjacent to a track assembly and/or a wall.

The embodiments described above include seal extensions **106** and **400** positioned on doors to form a seal between a door and an associated track assembly positioned beside the door, and between the door and a wall positioned in front of and/or above a door. However, seal extensions in accordance with the present technology can also form a seal with other components or parts positioned adjacent a door, (e.g., a wall adjacent to the side of a door). For example, in several embodiments, seal extensions can be attached to doors that, when closed, are positioned within an opening in a wall and surrounded by the wall on three sides. Seal extensions can be attached to an upper edge of the door and form a seal between the door and the portions of the wall that are adjacent to the side of the door.

FIG. **5**A is an isometric view of a bulb plug **500** configured in accordance with an embodiment of the present technology. The bulb plug **500** can be constructed of foam and can have a generally cylindrical shape. For example, in the illustrated embodiment, the bulb plug **500** has an annular cylindrical shape. In several embodiments, the sealing systems **102** and **416** described above can include individual bulb plugs **500** inserted into internal cavities of each of the individual side seals **118** (FIG. **1**A), as further described below.

FIG. **5**B is isometric top view of the door **100** and the door sealing system **102** configured in accordance with an embodiment of the present technology. In the illustrated embodiment, the bulb plugs **500** are positioned near the top of the individual side seals **118**, and extend partially above the top of the individual side seals **118**. Accordingly, the bulb plugs **500** can abut the underside of associated seal extensions **106** or **400**. The bulb plugs **500** can provide an enhanced seal by reducing any gaps between the side seals **118** and the seal extensions **106** or **400**, and/or reducing any air flow through the side seals **118**. Although the bulb plug **500** in the illustrated embodiment is shaped as an annular cylinder, bulb plugs in accordance with the present technology can be shaped in a variety of suitable forms, including solid cylinders, spheres, rectangular shapes, square shapes, etc.).

In the illustrated embodiment of FIG. **5**B, the door **100** includes a fastening track **503** having a pair of raised portions **502** extending along the top edge **108** and forming a recess **504** therebetween. The fastening track **503** can be formed from a variety of materials known in the art, e.g., extruded polyvinyl chloride (PVC). The raised portions **502** can include a plurality of T-slots **509** for attaching one or more components. Although not visible in FIG. **5**, the side edges of the door **100** can similarly include a fastening track **503** having T-slots for attaching components. For example, the side seals **118** can be attached to the door **100** via T-slots along the side edges. The fastening track **503** along the top edge and a corresponding fastening track along the side edge can be attached to the door via an angle fastener **507** and one or more additional fasteners **508** (e.g., screws).

FIG. **6** is an isometric top view of the door **100** and the door sealing system **102** configured in accordance with an embodiment of the present technology. In the illustrated embodiment, a piece of compressible and resilient weather strip **606** is attached to the door **100** in the recess **504** via, e.g., an adhesive. The weather strip **606** can form a seal between the door and an attached seal extension **106** or **400** and prevent air from entering the recess **504** via a gap between the seal extension **106** or **400** and the door **100**.

FIG. **7** is an isometric top view of a seal retainer **700** configured in accordance with an embodiment of the present technology. The seal retainer **700** can be at least generally similar in structure and function to the seal retainer **110** described above in reference to FIGS. **1**A and **1**B and can mount a blade seal to a door edge and retain the blade seal against an adjacent wall or other structure or component. In the illustrated embodiment, the seal retainer **700** includes openings **702** (e.g., circular openings) positioned near the ends of the seal retainer **700** and slotted openings **704** positioned along the length of the seal retainer **700**. Fasteners (e.g., screws) can be inserted through the openings **702** and **704** to secure the seal retainer **700** to a door (e.g., to an upper or top edge of the door, as shown in FIG. **1**A). The slotted openings **704** can provide for inward and outward flexing of the door, and can assist in maintaining a seal against an adjacent wall during such flexing. For example, very high temperatures, or large temperature differences between an interior and exterior of a facility, can result in bowing or warping of a door. The seal retainer **700** can remain in position while the door flexes, with the fasteners that extend through the slotted openings **704** allowing the middle portion of the door to bow inward or outward by moving relative to the slotted openings **704**. The fasteners in the slotted openings **704** can incorporate, e.g., fender washers and may be tightened to reduced torque to facilitate this door flexing. Accordingly, the seal retainer **700** can maintain an associated blade seal in position against a wall while a door bows or flexes.

FIG. **8** is an isometric top view of a door **800** configured in accordance with an embodiment of the present technology. The door **800** includes a retainer mounting system **803** having circular openings **802** and T-shaped slotted openings **804** that enable flexing of the door while maintaining a seal against an adjacent wall. For example, a seal retainer can be attached to the door **800** via fasteners positioned in the circular openings **802**. Guide pins or other components can extend through or from the seal retainer into the slotted openings **804**. The guide pins can be shaped to match and engage with the T-shaped slotted openings **804**. The middle portion of the door **800** can thereby flex inward or outward while the guide pins move within the slotted openings and the attached seal retainer maintains the position of an associated blade seal against an adjacent wall. Although the door **800** in the illustrated embodiment includes T-shaped slotted openings **804**, doors configured in accordance with the present technology can include slots, openings, or other components of a variety of shapes that can engage a retainer or a component attached thereto. For example, in some embodiments, the openings may be slots that do not include a "T" portion.

FIG. **9** is an isometric top view of a seal retainer **902** having a mounting system **905** configured in accordance with an embodiment of the present technology. In the illustrated embodiment, the seal retainer **902** includes circular openings **904** positioned at the far ends for attaching the ends of the seal retainer **902** to a door. The mounting system **905** includes at least one mounting bracket **906** having openings **908**. The mounting brackets **906** can be attached to a backside of a door via fasteners extending through the openings **908**. The mounting brackets **906** can extend up the back of the door and across a top edge of the door to engage the seal retainer **902**. In operation, as a door flexes inward or outward, the mounting brackets **906** can slide inward or outward while maintaining contact with the seal retainer **902**. The mounting brackets can thereby urge the seal retainer against the top edge and keep the seal retainer **902** in position as the door flexes.

From the foregoing, it will be appreciated that specific embodiments have been described herein for purposes of

illustration, but that a variety of modifications may be made without deviating from the spirit and scope of the various embodiments of the disclosure. For example, although certain embodiments of the present technology include seal extensions that are secured to a door via an adjustable mounting feature that includes screws, other adjustable mounting features can include a variety of suitable components to provide a similar effect. In some embodiments, a seal extension can be slidably coupled to a track and locked into position via one or more fasteners. Furthermore, it is within the scope of the present disclosure to provide other types of components for providing enhanced sealing of doors. For example, in place of or in addition to a bulb seal portion, a seal extension can include foam or another compressible material that can be positioned to form a seal between a door and an adjacent track assembly.

Further, while various advantages and features associated with certain embodiments of the present technology have been described above in the context of those embodiments, other embodiments may also exhibit such advantages and/or features, and not all embodiments need necessarily exhibit such advantages and/or features to fall within the scope of the disclosure. Accordingly, the disclosure is not limited, except as by the appended claims.

We claim:

1. A sealing system comprising:
an overhead door having a top edge;
a blade seal positionable along the top edge to form a first seal portion between the door and an adjacent surface;
a seal retainer for securing the blade seal to the door; and
a seal extension positionable to at least partially overlap the blade seal and form a second seal portion between the door and the adjacent surface, wherein
the seal extension includes—
a body having a first edge, a second edge, and at least one adjustable mounting feature;
a bulb seal portion extending from the first edge and positionable to form a seal with a track assembly; and
a blade seal portion extending from the second edge and positionable to form the second seal portion.

2. The sealing system of claim **1** wherein the seal retainer includes at least one slotted opening positioned to receive a fastener to movably secure the blade seal to the door.

3. The sealing system of claim **1**, further comprising:
a side seal positionable along a side edge of the door, the side seal including an internal cavity; and
a bulb plug positionable at least partially within the internal cavity of the side seal to form a seal between the seal extension and the side seal.

4. The sealing system of claim **1**, further comprising a weather strip positionable within a recess along the top edge to form a seal between the door and the seal extension.

5. The sealing system of claim **1** wherein the blade seal portion includes a slot for receiving a cable.

6. The sealing system of claim **1** wherein
the bulb seal portion comprises a folded fabric attached to the body via stitching.

7. A method for forming a seal between a door and a facility, the method comprising:
attaching or instructing the attachment of a seal extension to a top edge of the door adjacent to a blade seal, wherein—
the blade seal is positioned to form a first seal portion between the door and an adjacent surface, and
the blade seal is secured to the door via a seal retainer; and
adjusting or instructing adjustment of the seal extension to at least partially overlap the blade seal and form a second seal portion between the door and the adjacent surface, wherein—
the seal extension includes—
a body having a first edge, a second edge, and at least one adjustable mounting feature;
a bulb seal portion extending from the first edge and positionable to form a seal with a track assembly; and
a blade seal portion extending from the second edge and positionable to form the second seal portion.

8. The method of claim **7**, further comprising positioning or instructing positioning of a bulb plug within a side seal attached to the door.

9. The method of claim **7**, further comprising attaching or instructing attachment of a weather strip in a recess on the top edge of the door.

10. The method of claim **7**, further comprising positioning or instructing positioning of the seal extension to receive a cable within a cable slot.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 9,212,510 B2
APPLICATION NO. : 13/924868
DATED : December 15, 2015
INVENTOR(S) : William C. Eungard et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

IN THE CLAIMS

In column 10, line 16, in claim 7, after "attaching" delete "or instructing the attachment of".

In column 10, line 23, in claim 7, after "adjusting" delete "or instructing adjustment of".

In column 10, line 35-36, in claim 8, after "positioning" delete "or instructing positioning of".

In column 10, line 38-39, in claim 9, after "attaching" delete "or instructing attachment of".

In column 10, line 42, in claim 10, after "positioning" delete "or instructing positioning of".

Signed and Sealed this
Twelfth Day of April, 2016

Michelle K. Lee

Michelle K. Lee
Director of the United States Patent and Trademark Office